Plug-In

Frequency Mixer

SBL-1+

Level 7 (LO Power +7 dBm) 1 to 500 MHz



Generic photo used for illustration purposes only

CASE STYLE: A06

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

Permanent damage may occur if any of these limits are exceeded.

Features

- excellent conversion loss, 5.6 dB typ.
- high L-R isolation, 45 dB typ. L-I isolation, 40 dB typ.
- rugged welded construction

Applications

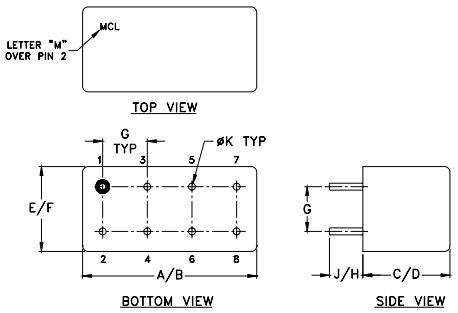
- VHF
- defense & federal communications

Pin Connections

LO	8
RF	1
IF	3,4^
GROUND	2,5,6,7

^ pins must be connected together externally

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F
.770	.800	.285	.310	.370	.400
19.56	20.32	7.24	7.87	9.40	10.16

G	H	J	K	wt
.200	.20	.14	.031	grams
5.08	5.08	3.56	0.79	5.2

Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)					
		Mid-Band m			Total Range	L		M		U		L		M		U	
LO/RF	IF																
f_L-f_U		$\overline{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
1-500	DC-500	5.60	.09	7.0	8.0	60	45	45	35	40	25	45	35	40	25	30	20

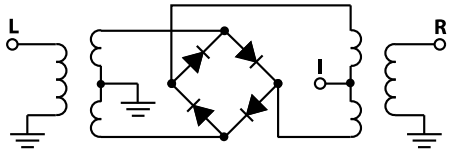
1 dB COMP.: +1 dBm typ.

L = low range [f_L to 10 f_L] M = mid range [10 f_L to f_U/2] U = upper range [f_U/2 to f_U]
m= mid band [2f_L to f_U/2]

Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
		LO	LO	LO	LO	LO
RF	LO	+7dBm	+7dBm	+7dBm	+7dBm	+7dBm
1.00	31.00	6.67	67.00	65.61	1.80	3.75
2.00	32.00	6.24	67.00	67.00	1.14	2.81
5.00	35.00	5.74	64.84	67.00	1.14	2.89
10.00	40.00	5.58	64.19	64.81	1.14	2.83
20.00	50.00	5.67	62.22	61.69	1.15	2.69
32.19	62.19	5.60	59.04	57.74	1.16	2.72
50.00	80.00	5.60	56.71	54.39	1.17	2.62
78.97	48.97	5.56	52.21	49.67	1.18	2.62
100.00	70.00	5.52	49.41	46.90	1.20	2.66
156.94	126.94	5.53	44.20	41.66	1.22	2.62
200.00	170.00	5.68	41.56	38.98	1.26	2.58
203.72	173.72	5.67	41.05	38.52	1.26	2.56
250.50	220.50	5.63	40.04	37.29	1.28	2.59
297.29	267.29	5.61	36.90	33.97	1.30	2.64
344.07	314.07	5.81	37.11	33.88	1.31	2.59
375.26	345.26	6.13	36.02	32.79	1.30	2.60
406.44	376.44	6.15	34.80	31.05	1.28	2.72
437.63	407.63	6.08	33.79	30.39	1.27	2.77
468.82	438.82	6.00	32.80	30.12	1.24	2.82
500.00	470.00	6.31	32.36	30.37	1.21	3.01

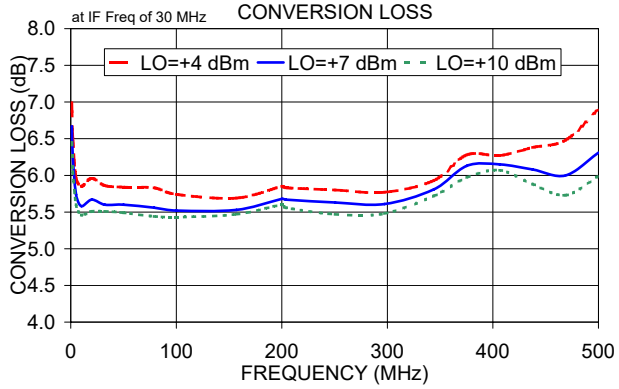
Electrical Schematic



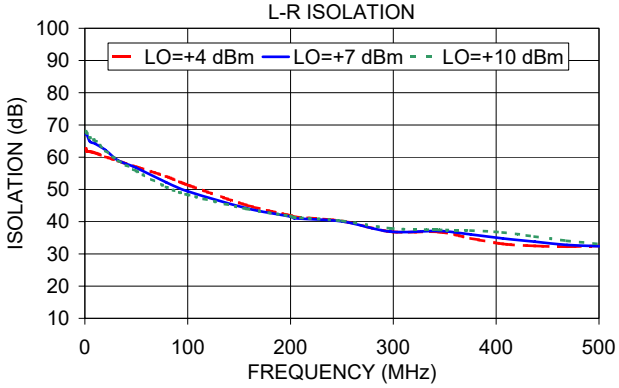
Notes

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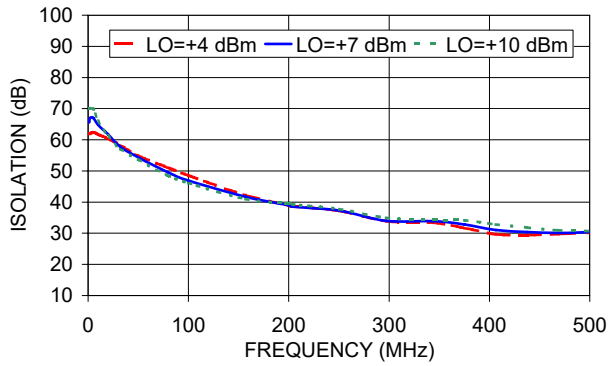
SBL-1
CONVERSION LOSS
at IF Freq of 30 MHz



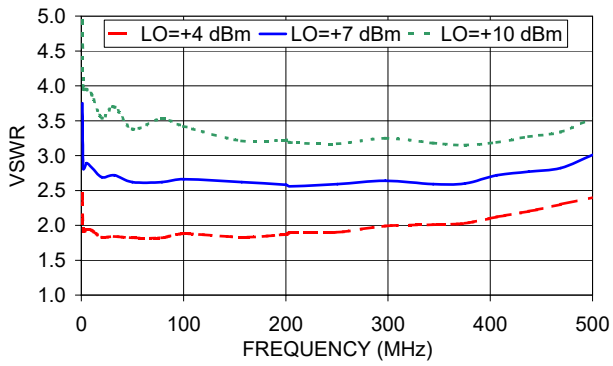
SBL-1
L-R ISOLATION



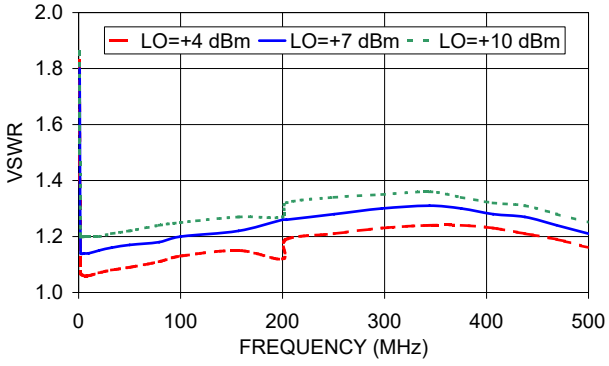
SBL-1
L-I ISOLATION



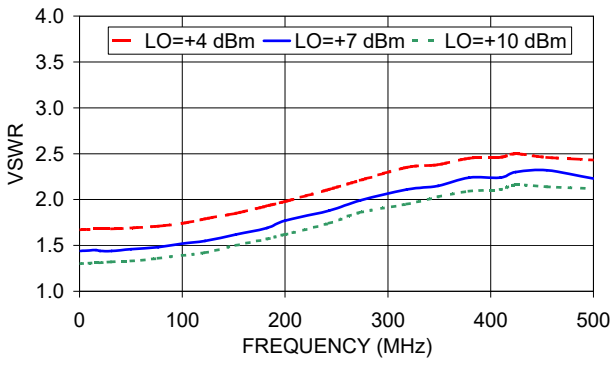
SBL-1
LO VSWR



SBL-1
RF VSWR



SBL-1
IF VSWR



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Frequency Mixer SBL-1+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+4	+7	+10
1.0	31.0	6.99	6.67	6.45
2.0	32.0	6.50	6.24	6.05
5.0	35.0	5.96	5.74	5.60
10.0	40.0	5.85	5.58	5.46
30.6	60.6	5.74	5.31	5.01
51.1	81.1	5.95	5.39	5.11
71.6	101.6	5.66	5.38	5.30
92.1	122.1	5.73	5.55	5.18
112.5	142.5	5.64	5.24	5.24
133.0	163.0	5.66	5.45	5.29
153.5	183.5	5.71	5.63	5.21
174.0	204.0	5.70	5.43	5.31
194.5	224.5	5.71	5.50	5.32
235.5	265.5	5.86	5.68	5.43
256.0	286.0	5.94	5.59	5.41
276.4	306.4	5.90	5.67	5.50
296.9	326.9	5.86	5.86	5.59
317.4	347.4	6.07	5.89	5.74
337.9	367.9	6.10	5.85	5.78
358.4	388.4	6.17	6.00	5.87
378.9	408.9	6.33	6.11	5.99
399.4	429.4	6.49	6.25	6.03
419.9	449.9	6.65	6.31	6.03
460.8	490.8	7.31	6.63	6.12
481.3	511.3	7.63	6.93	6.28
501.8	531.8	8.00	7.33	6.58
522.3	552.3	8.26	7.66	6.80
542.8	572.8	8.38	7.87	7.17
563.3	593.3	8.61	8.06	7.33
583.8	613.8	8.64	8.17	7.63
604.2	634.2	8.72	8.24	7.60
645.2	675.2	8.68	8.11	7.64
665.7	695.7	8.63	8.09	7.67
686.2	716.2	8.63	8.10	7.77
706.7	736.7	8.77	8.21	7.89
727.2	757.2	8.81	8.30	8.06
768.1	798.1	9.02	8.65	8.39
788.6	818.6	9.33	8.92	8.61
829.6	859.6	10.04	9.65	9.37
850.1	880.1	10.56	10.15	9.83

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+4	+7	+10
10.1	40.1	26.04	23.13	26.42
30.6	60.6	26.13	26.34	21.79
51.1	81.1	24.36	21.59	26.44
71.6	101.6	26.17	25.61	26.35
92.1	122.1	24.82	23.78	26.41
112.5	142.5	26.18	23.47	25.75
133.0	163.0	26.17	21.44	26.35
153.5	183.5	20.69	20.80	26.40
174.0	204.0	26.15	23.50	23.03
194.5	224.5	22.38	26.25	23.33
215.0	245.0	22.58	25.83	21.15
235.5	265.5	21.89	21.37	26.28
256.0	286.0	23.03	21.11	24.98
276.4	306.4	20.78	26.16	26.11
296.9	326.9	22.28	19.99	25.76
317.4	347.4	24.53	18.53	22.16
337.9	367.9	22.13	22.48	24.79
358.4	388.4	25.92	20.49	20.85
378.9	408.9	24.70	23.08	22.36
399.4	429.4	22.84	18.48	24.73
419.9	449.9	23.57	25.85	24.03
440.3	470.3	20.39	25.11	24.75
460.8	490.8	20.42	21.84	23.15
481.3	511.3	17.46	18.96	19.50
501.8	531.8	17.40	16.40	17.60
522.3	552.3	16.11	17.71	16.75
542.8	572.8	16.63	17.19	15.59
563.3	593.3	18.57	17.06	14.91
583.8	613.8	16.24	20.01	16.67
604.2	634.2	19.92	17.84	17.77
624.7	654.7	18.98	20.71	19.01
645.2	675.2	20.83	24.95	19.76
665.7	695.7	20.67	24.96	18.90
686.2	716.2	18.31	21.15	25.12
706.7	736.7	21.33	24.90	23.79
727.2	757.2	18.93	24.85	18.48
768.1	798.1	18.53	21.47	18.90
788.6	818.6	15.85	19.69	16.45
829.6	859.6	21.84	17.67	14.39
850.1	880.1	19.42	18.60	13.96

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	-0.53	0.83	-0.39
30.6	60.6	-0.38	-0.05	0.15
51.1	81.1	0.05	-0.05	0.37
71.6	101.6	0.11	0.00	0.01
92.1	122.1	-0.54	0.05	0.05
112.5	142.5	-0.39	0.05	-0.02
133.0	163.0	-0.17	0.07	0.07
153.5	183.5	-0.15	0.05	-0.05
174.0	204.0	0.03	-0.07	-0.06
194.5	224.5	0.08	0.01	-0.01
215.0	245.0	-0.07	-0.03	-0.09
235.5	265.5	-0.06	0.00	0.01
256.0	286.0	-0.06	0.06	-0.04
276.4	306.4	-0.02	0.01	0.07
296.9	326.9	-0.03	0.05	0.00
317.4	347.4	0.05	-0.03	-0.11
337.9	367.9	0.00	-0.03	0.03
358.4	388.4	-0.01	-0.01	-0.03
378.9	408.9	-0.03	0.07	-0.05
399.4	429.4	0.04	0.02	0.04
419.9	449.9	-0.04	0.08	0.04
440.3	470.3	0.03	0.07	0.01
460.8	490.8	-0.01	-0.03	-0.05
481.3	511.3	-0.09	0.00	-0.01
501.8	531.8	-0.08	-0.01	-0.01
522.3	552.3	-0.12	-0.13	-0.06
542.8	572.8	-0.16	-0.15	-0.04
563.3	593.3	-0.14	-0.11	-0.03
583.8	613.8	-0.16	-0.09	-0.06
604.2	634.2	-0.10	-0.07	-0.07
624.7	654.7	-0.11	-0.02	-0.02
645.2	675.2	-0.08	0.01	0.02
665.7	695.7	-0.03	-0.04	0.07
686.2	716.2	0.05	0.09	0.01
706.7	736.7	0.03	0.03	-0.02
727.2	757.2	0.06	0.01	-0.01
768.1	798.1	0.09	0.04	0.00
788.6	818.6	0.00	0.03	0.04
829.6	859.6	0.12	0.04	0.05
850.1	880.1	0.12	0.05	0.05

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=250.1MHz (dB)
		@LO (dBm)
		+7
240.0	10.1	5.87
234.1	16.0	5.82
228.2	21.9	5.70
222.3	27.8	5.67
216.4	33.7	5.63
210.5	39.6	5.61
204.6	45.5	5.57
198.7	51.4	5.53
192.8	57.3	5.52
186.9	63.2	5.49
181.0	69.1	5.53
175.1	75.0	5.50
169.2	80.9	5.50
163.3	86.8	5.51
157.4	92.7	5.49
151.5	98.6	5.50
145.6	104.5	5.50
139.7	110.4	5.50
133.8	116.3	5.45
127.9	122.2	5.45
122.1	128.0	5.48
116.2	133.9	5.52
110.3	139.8	5.53
104.4	145.7	5.52
98.5	151.6	5.47
92.6	157.5	5.49
86.7	163.4	5.49
80.8	169.3	5.50
74.9	175.2	5.50
69.0	181.1	5.48
63.1	187.0	5.50
57.2	192.9	5.49
51.3	198.8	5.55
45.4	204.7	5.55
39.5	210.6	5.63
33.6	216.5	5.55
27.7	222.4	5.59
21.8	228.3	5.55
15.9	234.2	5.74
10.0	240.1	5.39

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)
		@LO (dBm)
		+7
10.0	20.1	5.09
22.3	32.4	5.11
34.6	44.7	5.20
46.9	57.0	5.20
59.2	69.3	5.23
71.5	81.6	5.28
83.8	93.9	5.18
96.2	106.3	5.37
108.5	118.6	5.45
120.8	130.9	5.32
133.1	143.2	5.72
145.4	155.5	5.64
157.7	167.8	5.59
170.0	180.1	5.53
182.3	192.4	5.57
194.6	204.7	5.68
206.9	217.0	5.52
219.2	229.3	5.62
231.5	241.6	5.86
243.8	253.9	5.71
256.2	266.3	5.77
268.5	278.6	5.75
280.8	290.9	5.88
293.1	303.2	6.09
305.4	315.5	6.09
317.7	327.8	6.39
330.0	340.1	6.45
342.3	352.4	6.20
354.6	364.7	6.22
366.9	377.0	6.22
379.2	389.3	6.09
391.5	401.6	5.94
403.8	413.9	6.11
416.2	426.3	5.99
428.5	438.6	5.98
440.8	450.9	5.95
453.1	463.2	5.67
465.4	475.5	6.04
477.7	487.8	5.96
490.0	500.1	5.86

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)
		@LO (dBm)
		+7
490.0	10.1	7.46
477.7	22.4	7.33
465.4	34.7	7.25
453.1	47.0	7.22
440.8	59.3	7.25
428.5	71.6	7.16
416.2	83.9	7.09
403.8	96.3	7.07
391.5	108.6	6.99
379.2	120.9	7.02
366.9	133.2	7.04
354.6	145.5	6.97
342.3	157.8	7.00
330.0	170.1	6.98
317.7	182.4	7.00
305.4	194.7	7.02
293.1	207.0	6.95
280.8	219.3	6.94
268.5	231.6	6.95
256.2	243.9	6.95
243.8	256.3	7.06
231.5	268.6	7.00
219.2	280.9	6.91
206.9	293.2	6.90
194.6	305.5	6.84
182.3	317.8	6.84
170.0	330.1	6.88
157.7	342.4	6.91
145.4	354.7	6.95
133.1	367.0	6.94
120.8	379.3	6.85
108.5	391.6	6.82
96.2	403.9	6.67
83.8	416.3	6.48
71.5	428.6	6.36
59.2	440.9	6.27
46.9	453.2	6.29
34.6	465.5	6.42
22.3	477.8	6.58
10.0	490.1	6.67

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+4	+7	+10	+4	+7	+10
1.0	62.73	67.00	68.01	61.88	65.61	70.00
2.0	61.86	67.00	67.46	61.93	67.00	70.00
5.0	61.73	64.84	66.12	62.43	67.00	70.00
10.0	61.35	64.19	65.15	61.72	64.81	66.04
30.6	63.29	64.90	66.09	58.07	56.85	55.84
51.1	59.26	60.58	61.78	54.56	53.47	52.63
71.6	56.16	57.67	58.95	53.00	51.50	50.57
92.1	54.28	55.59	56.83	50.97	50.27	48.66
112.5	52.52	54.29	55.26	49.14	48.68	47.44
133.0	51.12	52.35	53.33	47.12	46.83	45.72
153.5	50.11	51.43	52.45	46.28	45.82	45.16
174.0	48.88	50.14	51.16	45.09	45.28	44.51
194.5	47.54	48.68	49.67	43.58	44.07	43.80
235.5	46.70	47.99	49.18	41.02	41.48	41.68
256.0	46.11	47.26	48.38	39.94	40.74	41.43
276.4	45.11	46.42	47.41	40.36	41.34	42.12
296.9	44.87	46.08	47.18	39.89	41.02	41.72
317.4	44.36	45.82	46.99	39.77	41.43	42.35
337.9	42.79	44.25	45.53	39.04	40.93	42.37
358.4	42.74	44.32	45.84	37.42	39.19	40.70
378.9	42.32	43.90	45.39	36.56	38.53	40.37
399.4	42.38	44.52	47.23	35.62	37.41	39.43
419.9	42.41	44.95	47.71	34.83	36.27	38.03
460.8	41.99	44.40	46.97	34.41	35.05	36.45
481.3	42.13	45.13	49.18	35.04	35.37	36.49
501.8	43.18	46.30	49.52	35.29	35.86	36.61
522.3	43.46	47.39	52.77	35.59	36.22	36.58
542.8	43.43	46.82	49.97	35.33	35.96	36.44
563.3	44.39	48.68	52.30	35.26	35.55	35.51
583.8	43.21	45.17	46.03	35.49	35.47	35.11
604.2	44.06	46.45	47.42	35.46	34.96	34.23
645.2	43.90	44.33	43.37	34.50	33.04	31.39
665.7	43.47	41.83	39.48	33.12	31.22	28.60
686.2	44.30	41.21	38.11	31.26	28.71	25.69
706.7	45.36	38.99	35.70	29.55	26.45	23.81
727.2	44.68	37.44	34.55	27.76	24.64	22.34
768.1	40.31	34.45	32.17	24.58	22.27	20.71
788.6	37.55	33.06	30.96	23.36	21.42	19.96
829.6	33.78	30.97	29.08	21.38	20.02	18.81
850.1	32.11	29.84	28.12	20.52	19.44	18.25

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
10.1	40.1	13.03	22.48	31.18
30.6	60.6	12.90	22.13	32.34
51.1	81.1	27.20	25.12	33.34
71.6	101.6	31.86	26.65	29.55
92.1	122.1	32.04	27.65	28.66
112.5	142.5	30.06	32.34	30.42
133.0	163.0	28.80	30.60	32.10
153.5	183.5	27.98	28.81	29.84
174.0	204.0	27.58	29.49	29.69
194.5	224.5	28.48	28.43	29.86
215.0	245.0	27.47	28.31	28.67
235.5	265.5	27.82	27.85	27.20
256.0	286.0	27.31	28.26	28.84
276.4	306.4	27.41	29.06	29.96
296.9	326.9	26.75	27.86	29.18
317.4	347.4	25.41	26.16	26.26
337.9	367.9	23.80	24.12	24.62
358.4	388.4	22.62	22.74	22.84
378.9	408.9	21.39	21.75	21.38
399.4	429.4	20.49	20.32	20.27
419.9	449.9	20.05	20.02	19.97
440.3	470.3	19.58	19.57	19.67
460.8	490.8	19.56	19.59	19.72
481.3	511.3	19.46	19.70	19.89
501.8	531.8	19.50	19.50	19.64
522.3	552.3	20.08	19.98	20.20
542.8	572.8	20.32	20.16	20.19
563.3	593.3	20.60	20.42	20.18
583.8	613.8	20.28	20.08	19.84
604.2	634.2	19.71	19.45	19.23
624.7	654.7	19.02	18.72	18.35
645.2	675.2	18.18	17.77	17.35
665.7	695.7	17.37	16.80	16.21
686.2	716.2	16.57	15.94	15.37
706.7	736.7	15.80	15.03	14.48
727.2	757.2	14.96	14.22	13.70
768.1	798.1	13.40	12.69	12.17
788.6	818.6	12.71	12.07	11.53
829.6	859.6	11.24	10.67	10.11
850.1	880.1	10.75	10.12	9.53

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm) +4	+7	+10
1.0	31.0	1.83	1.80	1.86
10.1	40.1	1.18	1.14	1.10
30.6	60.6	1.22	1.05	1.05
51.1	81.1	1.15	1.06	1.07
71.6	101.6	1.06	1.04	1.01
92.1	122.1	1.09	1.02	1.08
112.5	142.5	1.06	1.07	1.12
133.0	163.0	1.03	1.04	1.09
153.5	183.5	1.02	1.08	1.13
174.0	204.0	1.04	1.14	1.20
194.5	224.5	1.06	1.14	1.22
215.0	245.0	1.09	1.13	1.22
235.5	265.5	1.10	1.15	1.19
256.0	286.0	1.15	1.24	1.28
276.4	306.4	1.21	1.32	1.41
296.9	326.9	1.26	1.37	1.47
317.4	347.4	1.27	1.39	1.48
337.9	367.9	1.31	1.41	1.47
358.4	388.4	1.37	1.44	1.53
378.9	408.9	1.39	1.46	1.52
399.4	429.4	1.34	1.41	1.43
419.9	449.9	1.26	1.32	1.32
440.3	470.3	1.20	1.22	1.23
460.8	490.8	1.15	1.12	1.14
481.3	511.3	1.13	1.08	1.04
501.8	531.8	1.20	1.12	1.07
542.8	572.8	1.41	1.37	1.31
563.3	593.3	1.55	1.51	1.48
583.8	613.8	1.68	1.65	1.63
604.2	634.2	1.83	1.80	1.81
624.7	654.7	1.97	1.97	2.00
645.2	675.2	2.12	2.14	2.16
665.7	695.7	2.27	2.29	2.32
686.2	716.2	2.42	2.44	2.45
706.7	736.7	2.51	2.56	2.56
727.2	757.2	2.64	2.64	2.64
768.1	798.1	2.83	2.80	2.72
788.6	818.6	2.91	2.84	2.80
829.6	859.6	3.14	3.04	3.00
850.1	880.1	3.26	3.18	3.14

LO (MHz)	LO VSWR (:1) @LO (dBm) +4	+7	+10
1.0	2.45	3.75	5.47
10.1	1.85	2.60	3.76
30.6	1.84	2.73	3.80
51.1	1.76	2.56	3.56
71.6	1.67	2.37	3.27
92.1	1.69	2.38	3.26
112.5	1.74	2.51	3.45
133.0	1.79	2.57	3.51
153.5	1.75	2.48	3.37
174.0	1.75	2.44	3.29
194.5	1.80	2.52	3.38
215.0	1.88	2.62	3.52
235.5	1.91	2.65	3.52
256.0	1.90	2.61	3.45
276.4	1.93	2.63	3.47
296.9	2.01	2.73	3.58
317.4	2.10	2.84	3.70
337.9	2.12	2.85	3.70
358.4	2.13	2.84	3.67
378.9	2.18	2.91	3.74
399.4	2.27	2.99	3.84
419.9	2.32	3.03	3.86
440.3	2.36	3.04	3.84
460.8	2.42	3.10	3.89
481.3	2.53	3.24	4.02
501.8	2.64	3.37	4.16
542.8	2.72	3.44	4.24
563.3	2.78	3.50	4.30
583.8	2.87	3.60	4.41
604.2	2.95	3.67	4.47
624.7	2.97	3.68	4.47
645.2	3.00	3.69	4.46
665.7	3.05	3.73	4.50
686.2	3.10	3.76	4.51
706.7	3.12	3.76	4.48
727.2	3.14	3.76	4.46
768.1	3.27	3.86	4.56
788.6	3.38	3.94	4.61
829.6	3.63	4.09	4.68
850.1	3.79	4.21	4.75

IF (OUT) (MHz)	IF VSWR @LO=500.1MHz (:1) @LO (dBm) +4	+7	+10
1.0	1.67	1.44	1.30
22.6	2.17	1.84	1.61
35.1	2.22	1.88	1.65
47.7	2.40	2.02	1.77
60.3	2.50	2.11	1.85
72.8	2.49	2.12	1.86
85.4	2.39	2.05	1.81
97.9	2.31	1.97	1.76
110.5	2.31	1.99	1.78
123.1	2.41	2.07	1.87
135.6	2.52	2.18	1.96
148.2	2.59	2.24	2.02
160.8	2.58	2.22	2.01
173.3	2.54	2.19	1.98
185.9	2.54	2.20	2.00
198.5	2.56	2.23	2.04
211.0	2.58	2.25	2.08
223.6	2.61	2.27	2.10
236.2	2.63	2.29	2.11
248.7	2.66	2.33	2.14
261.3	2.71	2.36	2.17
273.8	2.72	2.38	2.19
286.4	2.69	2.36	2.19
299.0	2.65	2.33	2.17
311.5	2.67	2.34	2.17
324.1	2.74	2.40	2.23
336.7	2.81	2.47	2.29
349.2	2.85	2.49	2.29
361.8	2.79	2.45	2.25
374.4	2.72	2.39	2.20
386.9	2.71	2.37	2.18
399.5	2.75	2.40	2.20
412.1	2.80	2.44	2.24
424.6	2.75	2.40	2.21
437.2	2.73	2.35	2.15
449.7	2.72	2.36	2.13
462.3	2.74	2.36	2.15
474.9	2.77	2.37	2.14
487.4	2.76	2.37	2.13
500.0	2.51	2.36	2.35

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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	20	37	17	35	25	40	42	44	51	68
1	-	25	+0	39	11	37	25	45	37	48	41	48
2	>100	72	55	74	57	80	60	80	61	72	74	77
3	>100	71	63	68	65	73	59	73	>80	75	70	77
4	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
5	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
6	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
7	>100	>80	>80	>80	>80	>80	>80	79	>80	>80	>80	>80
8	>100	>80	>80	>80	>80	>80	>80	>80	77	>80	>80	>80
9	>100	>80	>80	>80	>80	>80	>80	>80	>80	61	>80	>80
10	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	64	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 250.1 MHz; -14.00 dBm.
LO IN: 280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -19.54 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	30	47	27	46	36	52	55	56	72	74
1	-	26	+0	36	12	36	27	52	39	58	50	57
2	97	58	50	63	51	62	59	64	57	66	66	77
3	>100	57	37	51	42	65	36	54	51	59	55	66
4	>100	78	71	75	64	75	64	78	66	>90	68	81
5	>100	74	61	68	53	64	53	68	58	64	73	68
6	>100	>90	90	86	88	85	87	>90	77	84	84	>90
7	>100	>90	80	83	70	76	64	79	64	83	63	74
8	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	86	>90
9	>100	88	>90	>90	>90	>90	81	>90	83	72	83	90
10	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	82	>90
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

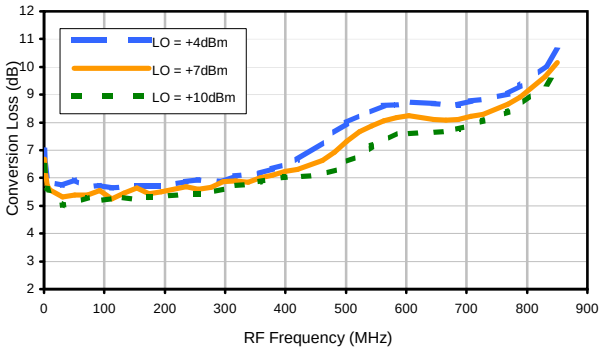
Test conditions:
RF IN: 250.1 MHz; -4.00 dBm.
LO IN: 280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -9.63 dBm

Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

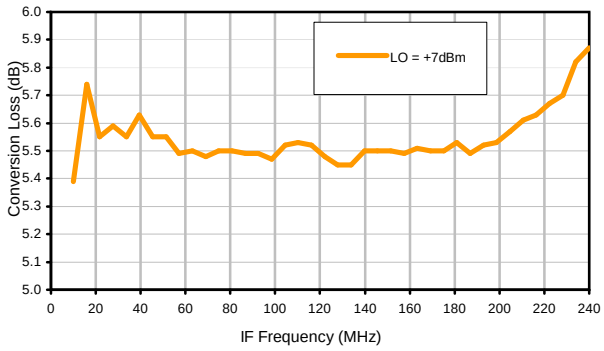
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Typical Performance Curves

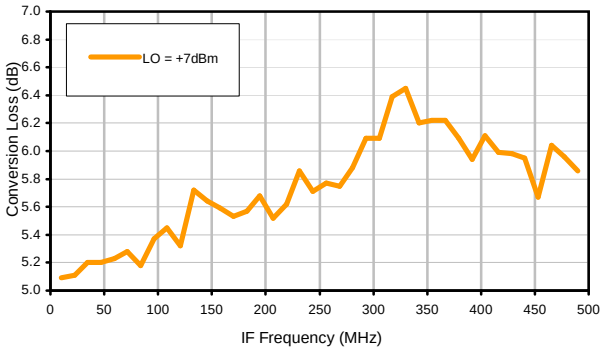
Conversion Loss @ IF=30MHz



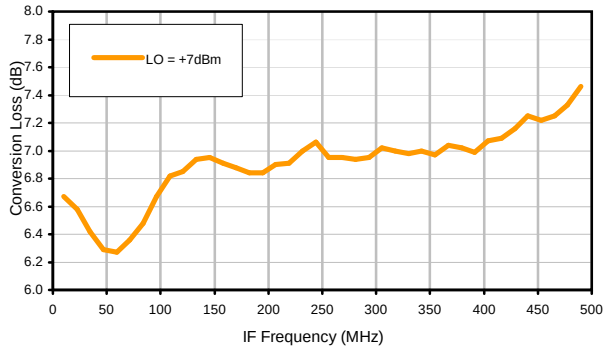
Conversion Loss vs. IF @ RF=250.1MHz



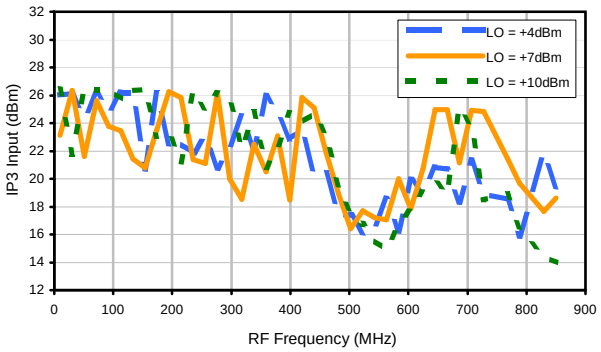
Conversion Loss vs. IF @ RF=10.1MHz



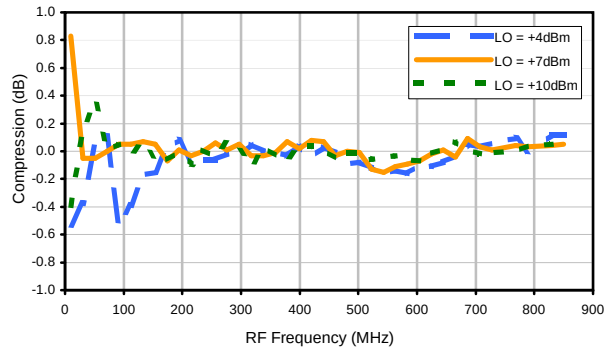
Conversion Loss vs. IF @ RF=500.1MHz



IP3 Input



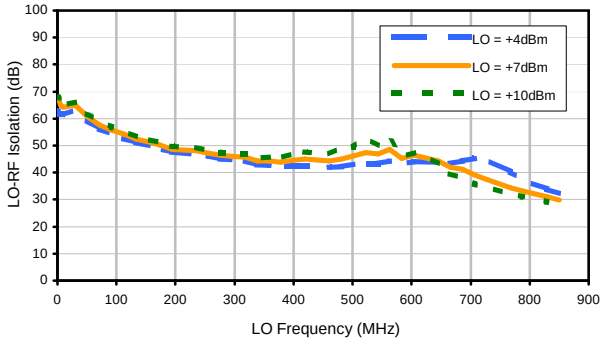
Compression @ RF IN=+1dBm



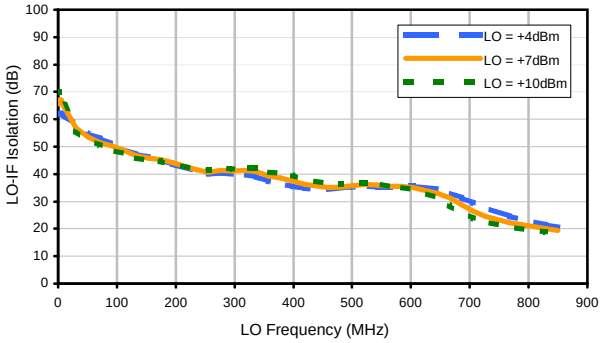
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Typical Performance Curves

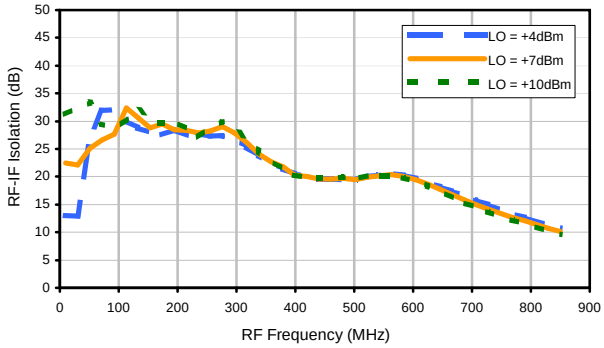
LO-RF Isolation



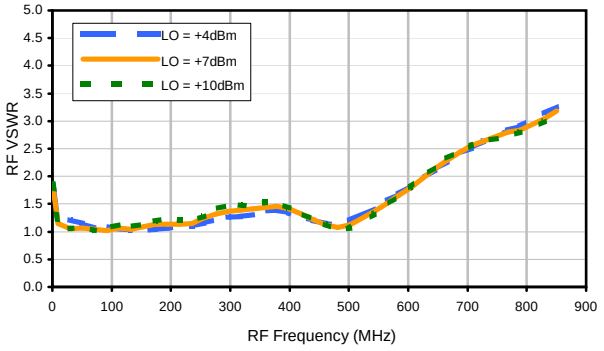
LO-IF Isolation



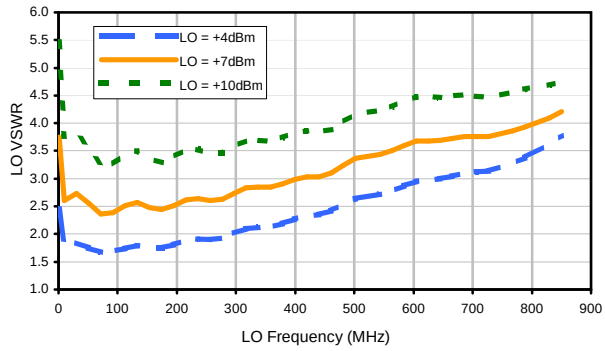
RF-IF Isolation



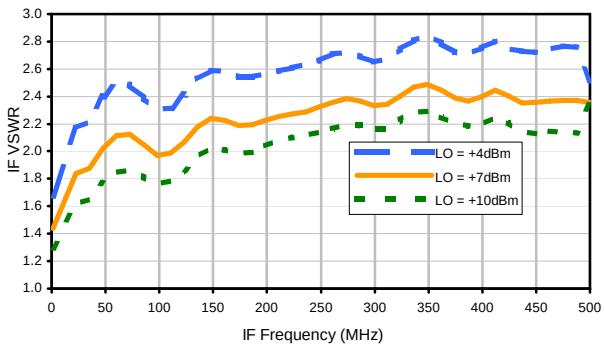
RF VSWR



LO VSWR



IF VSWR



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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	20	37	17	35	25	40	42	44	51	68
1	-	25	+0	39	11	37	25	45	37	48	41	48
2	>100	72	55	74	57	80	60	80	61	72	74	77
3	>100	71	63	68	65	73	59	73	>80	75	70	77
4	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
5	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
6	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
7	>100	>80	>80	>80	>80	>80	>80	79	>80	>80	>80	>80
8	>100	>80	>80	>80	>80	>80	>80	>80	77	>80	>80	>80
9	>100	>80	>80	>80	>80	>80	>80	>80	>80	61	>80	>80
10	>100	>80	>80	>80	>80	>80	>80	>80	>80	>80	64	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -14.00 dBm.
LO IN: 280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -19.54 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	30	47	27	46	36	52	55	56	72	74
1	-	26	+0	36	12	36	27	52	39	58	50	57
2	97	58	50	63	51	62	59	64	57	66	66	77
3	>100	57	37	51	42	65	36	54	51	59	55	66
4	>100	78	71	75	64	75	64	78	66	>90	68	81
5	>100	74	61	68	53	64	53	68	58	64	73	68
6	>100	>90	90	86	88	85	87	>90	77	84	84	>90
7	>100	>90	80	83	70	76	64	79	64	83	63	74
8	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	86	>90
9	>100	88	>90	>90	>90	>90	81	>90	83	72	83	90
10	>100	>90	>90	>90	>90	>90	>90	>90	>90	>90	82	>90
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -4.00 dBm.
LO IN: 280.01 MHz; +7.00 dBm
IF OUT: 29.91 MHz; -9.63 dBm

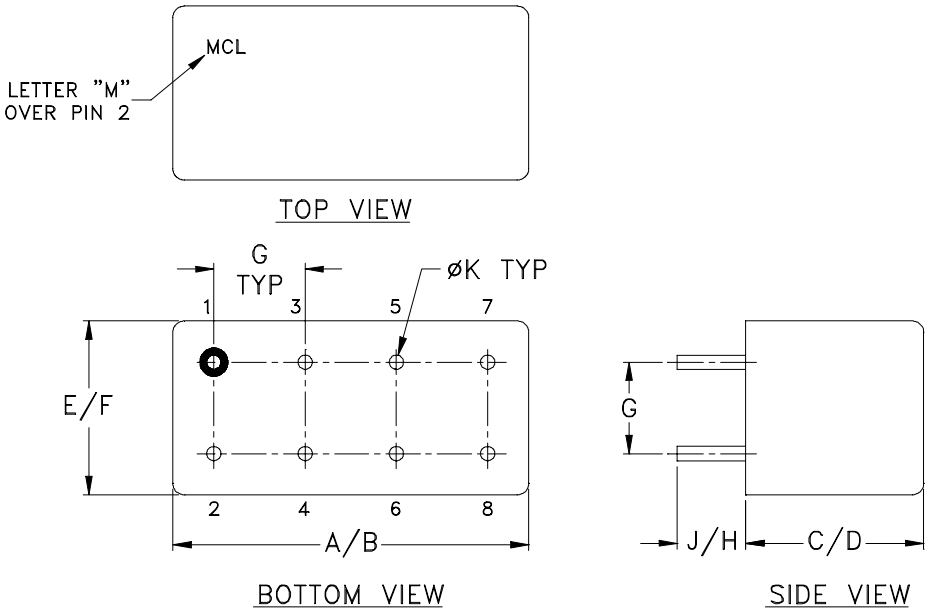
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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Case Style A

A01
A04
A05
A06

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	WT, GRAM
A01	.770 (19.56)	.800 (20.32)	.385 (9.78)	.400 (10.16)	.370 (9.40)	.400 (10.16)	.200 (5.08)	.20 (5.08)	.14 (3.56)	.031 (.79)	5.2
A04			.200 (5.08)	.210 (5.33)							3.7
A05			.240 (6.10)	.250 (6.35)							3.7
A06			.285 (7.24)	.310 (7.87)							5.2

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Header material: C.R.S.
   Pin material: #52 alloy.
   Cover material: Cupro-Nickel.
2. Pin finish: Electro Tin-Silver.
3. Insulated spacer available. Request P/N B14-045-01.
4. Tolerance on pin diameter +/-.005 inch.
5. Glass meniscus 0.015 inch max.
6. Blue bead indicates Pin 1. Pin numbers do not appear on unit, for reference only.

Mini-Circuits®
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Environmental Specifications ENV30

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Moisture Resistance	10 cycles, 24 hours per cycle	MIL-STD-202, Method 106, Condition A, except 50°C and end point electrical test done within 12 hours
Solderability	10X Magnification	J-STD-002, 95% Coverage
Resistance to Solder Heat	260°C for 10 seconds	MIL-STD-202, Method 210, Condition B
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215
Terminal Strength	4 1/2 Pound Pull	MIL-STD-202, Method 211, Condition A

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Specification	Test/Inspection Condition	Reference/Spec
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D

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